

9-17-08-4982-12-sequence listing.txt  
SEQUENCE LISTING

<110> CropDesign N.V.  
<120> Stress Tolerance  
<130> 4982-12  
<140> 10/552,686  
<141> 2005-11-21  
<150> PCT/EP04/50513  
<151> 2004-04-13  
<150> EP 03076064.9  
<151> 2003-04-11  
<160> 11  
<170> PatentIn version 3.2  
<210> 1  
<211> 1344  
<212> DNA  
<213> Beta vulgaris

<220>  
<221> misc\_feature  
<222> (3)..(3)  
<223> n is a, c, g, or t

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acgatcgtag agtctctgtt ttctactgta taaatctatt caaacaattt tctctctcct 180  
attattttcaa ttctcggtttg ctaattcaag gtgaatcaaa tgtcggcaaa tatgttttcc 240  
agactttttg gtgctaaatc tcgtgatgca gctactactg agactacttt atctacatta 300  
gagaaattga atgagacact tgaaatgcta gagaagaaaag agcagcttct aatgaaaaag 360  
gctactgcag aggttgaaaa ggccaaagag ttcaacaagg caaagaataa acgtgctgct 420  
atacaatgtt taaagaggaa aaggttatac gaacagcaag tcgagcaggt tgggaatttt 480  
caactacgaa ttcatgatca gatcataatg cttgattctg caaaagcaac gacagagaca 540  
gttgctgcat tgagatctgg tgctagtgtc atgaaggcta tgcagaaaagc aacaaacatt 600  
gatgatgtgg acaagacaat ggatgagatc aatgagcaga ccgataactt gagacagata 660  
caggaggcac tagctactcc tgttggtgca actgattttg atgaggatga attggaagct 720  
gagcttgaag aacttgaagg agctgagttg gaggaacaac ttctacaacc atttacaact 780  
gcccctacgg caccaattca tgttccagaa ggcaagctgc cagcaaggcc aacaccccaa 840  
aagaactctg aggaagatga actcgctgcg ttacaagcag aaatggcact ttgaaggctt 900  
ttcttttttc atgtttataa tcatgtccca aagaaatgga aacgggctgg aaaaaggaaa 960  
aggcaaagga aaagaaaagg aaaagaaaaa gattgaaaat ctttattgat tgatggtggt 1020  
atatttaagt attgagtgtt gatagcatct tgttgtcatg tactatatgc ctatatggag 1080  
tacctgttat taattggtaa tgttaatgca aatattgtct ataccattga tgaacaaaga 1140  
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<210> 2  
<211> 224  
<212> PRT  
<213> Beta vulgaris

<400> 2

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20 25 30  
Thr Leu Glu Met Leu Glu Lys Lys Glu Gln Leu Leu Met Lys Lys Ala  
35 40 45  
Thr Ala Glu Val Glu Lys Ala Lys Glu Phe Thr Arg Ala Lys Asn Lys  
50 55 60  
Arg Ala Ala Ile Gln Cys Leu Lys Arg Lys Arg Leu Tyr Glu Gln Gln  
65 70 75 80  
Val Glu Gln Val Gly Asn Phe Gln Leu Arg Ile His Asp Gln Ile Ile  
85 90 95  
Met Leu Asp Ser Ala Lys Ala Thr Thr Glu Thr Val Ala Ala Leu Arg  
100 105 110  
Ser Gly Ala Ser Ala Met Lys Ala Met Gln Lys Ala Thr Asn Ile Asp  
115 120 125  
Asp Val Asp Lys Thr Met Asp Glu Ile Asn Glu Gln Thr Asp Asn Leu  
130 135 140  
Arg Gln Ile Gln Glu Ala Leu Ala Thr Pro Val Gly Ala Thr Asp Phe  
145 150 155 160  
Asp Glu Asp Glu Leu Glu Ala Glu Leu Glu Glu Leu Glu Gly Ala Glu  
165 170 175  
Leu Glu Glu Gln Leu Leu Gln Pro Phe Thr Thr Ala Pro Thr Ala Pro  
180 185 190  
Ile His Val Pro Glu Gly Lys Leu Pro Ala Arg Pro Thr Pro Gln Lys  
195 200 205  
Asn Ser Glu Glu Asp Glu Leu Ala Ala Leu Gln Ala Glu Met Ala Leu  
210 215 220

<210> 3  
<211> 1341  
<212> DNA  
<213> Beta vulgaris

<220>  
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<223> n is a, c, g, or t

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aaaatttttc ttccaaaatt catttccact attttcagat atttcacac taaaatctcc 180  
tcgagtttaac ctaatcactc cattcttatt tcctctcggg aaaaaaccta atcaatcaac 240  
tttacgcggt ttcatctctc gatctttttc gtttcctcgt aatttttttag cgatcaccca 300  
ttttcgttaa atatgtttac aaggggtttc ggtaaacctta aggaaggaac aacgagtgt 360  
gttgcaacgt tagacaaatt gagtgagaca ctcgaaatgt tggaaaaaaa agaacaggtg 420  
cttttgaaga aggctggtgc tgaggttgaa aaggccaagg agttcactag agcaaagaac 480  
aaacgtgctg ctataacttg tctgaagagg aagaggctat acgaacaaca aatagagcag 540  
cttggaaaca tgcagttgcg aattcatgat cagatgatac tgcttgaagg ggcaaaggca 600

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acaacagaga	ctgtcga	attgaggtct	ggtgcctcgg	ctatgaaggc	catgcaaaag	660
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ttaaaacaaa	tacaggaagc	tctctctgct	ccaatcgggtg	cagcagctga	cttttgatga	780
ggatgacctg	aaagcagagc	ttgaagagct	agaagggtgct	gaattgaaga	agcaacttat	840
cagcccagct	actactgctc	ctgctgcacc	agtgcattgct	cctgctggaa	aacaacctga	900
cgccccctgca	cctcgggaag	aatactgctt	gaanaggatg	agctcgccgc	gttgcaagca	960
gagatggccc	ctgtaaaaag	tttttctgga	ctggaataca	ggagttgggtc	ttacatcaaa	1020
gtagctgtat	aataagctaa	ttattattgc	tttgggtacc	acctttacag	gcacgtatta	1080
cccaatcacg	gatatttggt	aataaaatgt	gctgtgtagg	ttgctgatg	ttgttgatta	1140
ggccgtagtt	ctccttgctg	caggtcttga	ttgcacctta	ttctcgatgt	aaatttcaga	1200
ttctcttata	gacattgtaa	tttgtgacaa	aatatcgatc	atttggtacg	agttaaccct	1260
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aaaaaaaaaa	aactcgaggg	g				1341

<210> 4  
 <211> 154  
 <212> PRT

<213> Beta vulgaris

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 Lys Glu Gln Val Leu Leu Lys Lys Ala Gly Ala Glu Val Glu Lys Ala  
 35 40 45  
 Lys Glu Phe Thr Arg Ala Lys Asn Lys Arg Ala Ala Ile Thr Cys Leu  
 50 55 60  
 Lys Arg Lys Arg Leu Tyr Glu Gln Gln Ile Glu Gln Leu Gly Asn Met  
 65 70 75 80  
 Gln Leu Arg Ile His Asp Gln Met Ile Leu Leu Glu Gly Ala Lys Ala  
 85 90 95  
 Thr Thr Glu Thr Val Asp Ala Leu Arg Ser Gly Ala Ser Ala Met Lys  
 100 105 110  
 Ala Met Gln Lys Ala Thr Asn Ile Asp Asn Val Asp Lys Thr Met Asp  
 115 120 125  
 Glu Ile Asn Glu Gln Thr Glu Asn Leu Lys Gln Ile Gln Glu Ala Leu  
 130 135 140  
 Ser Ala Pro Ile Gly Ala Ala Ala Asp Phe  
 145 150

<210> 5  
 <211> 1019  
 <212> DNA  
 <213> Beta vulgaris

<220>  
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 <223> n is a, c, g, or t

<220>  
 <221> misc\_feature

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<222> (1001)..(1001)

<223> n is a, c, g, or t

<400> 5

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cgtcaatctc	gtaagtgcga	gaaagaagaa	aaagctgaga	aactcaaagt	caagaaagca	180
atcgagaaag	gaaacatgga	tggagctcga	atttacgccg	aaaacgcaat	tcgtaagcgt	240
actgaacaga	tgaactactt	gcgcctcgct	tctcgctcgc	acgccgtcgt	ttcgcgcttc	300
gatactcaag	ctaagatgca	aaccatcgga	aaatcgatgg	gatcaattgt	taaatcgctt	360
gagtcgtctt	tgaataccgg	taatttgcag	aagatgtcgg	agacaatgga	caattttgag	420
aagcaatttg	ttaatatgga	agttcaggct	gagtttatgg	agagttctat	ggctgggagt	480
acttcgcttt	cgactcccga	aaccgaggtt	aatagtttga	tgcagcaggt	ggcggatgat	540
tatggccttg	aggtttctgt	gggtttgcct	caggctgctg	gacatgctat	tcctgttccg	600
aaggcggcgg	agaaggttga	tgaggatgat	cttaccagga	ggctcgccga	gctcaaggct	660
cgaggttgaa	gtcaaaggta	aaaagggttaa	ggttttattg	ataatgttgt	atagattatg	720
agctttactg	atgatcaacc	cttcgtgata	tgggggtttg	atgataattt	gctctatatt	780
atggagattt	ggagcttttg	gaaccgataa	ctgtggatgg	tttaattatg	tattatattg	840
tatttgtcta	ttggaaaaaa	aaaaaaaaaa	aaaactcgag	ggggggcccc	gtaccaagat	900
ggcctttggt	gggttgaaga	aggaaaaaga	cagaaacgac	ttaattacct	acttgaaaaa	960
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<210> 6

<211> 204

<212> PRT

<213> Beta vulgaris

<400> 6

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			20					25					30		
Lys	Ala	Glu	Lys	Leu	Lys	Val	Lys	Lys	Ala	Ile	Glu	Lys	Gly	Asn	Met
		35					40					45			
Asp	Gly	Ala	Arg	Ile	Tyr	Ala	Glu	Asn	Ala	Ile	Arg	Lys	Arg	Thr	Glu
	50					55				60					
Gln	Met	Asn	Tyr	Leu	Arg	Leu	Ala	Ser	Arg	Leu	Asp	Ala	Val	Val	Ser
65					70					75					80
Arg	Leu	Asp	Thr	Gln	Ala	Lys	Met	Gln	Thr	Ile	Gly	Lys	Ser	Met	Gly
				85					90					95	
Ser	Ile	Val	Lys	Ser	Leu	Glu	Ser	Ser	Leu	Asn	Thr	Gly	Asn	Leu	Gln
			100					105					110		
Lys	Met	Ser	Glu	Thr	Met	Asp	Asn	Phe	Glu	Lys	Gln	Phe	Val	Asn	Met
		115					120					125			
Glu	Val	Gln	Ala	Glu	Phe	Met	Glu	Ser	Ser	Met	Ala	Gly	Ser	Thr	Ser
	130					135					140				
Leu	Ser	Thr	Pro	Glu	Thr	Glu	Val	Asn	Ser	Leu	Met	Gln	Gln	Val	Ala
145					150					155					160
Asp	Asp	Tyr	Gly	Leu	Glu	Val	Ser	Val	Gly	Leu	Pro	Gln	Ala	Ala	Gly
			165						170					175	
His	Ala	Ile	Pro	Val	Pro	Lys	Ala	Ala	Glu	Lys	Val	Asp	Glu	Asp	Asp
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Leu Thr Arg Arg Leu Ala Glu Leu Lys Ala Arg Gly  
195 200

<210> 7  
<211> 1510  
<212> DNA  
<213> Beta vulgaris

<220>  
<221> misc\_feature  
<222> (2)..(3)  
<223> n is a, c, g, or t

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ccagtagccg agaaaccagc tgagaagcca gctgagaagg cagttctacc acctgaagct 180  
gagaaactag ctgcagctga atcagctgaa gccgagaagc cagctgattc agccgaggct 240  
aagatagctc aacaagtctc attcaaagag gagactaatg ttgcaagtga gctacctgag 300  
ctacatagaa aggcctctcg ggacttgaag aaacttattc aagaagccct cgagaagcac 360  
gagttctctt ctccctctcc tccgcctccg cctgctccag ctaaagttga ggagaaggcg 420  
gaagagaaga aagaggaaca acctccatcc accacctcca ccaccaccac caccaccacc 480  
gcggtttcag atgaggttgc tgttgctcct ccattccgaag aggccccgaa aactgacgag 540  
gcctctccga aagtggagga ggagcctgca aaaatagttg agcaaccacc tacaacaccg 600  
gcagaagaac ctgaaccagc aaaaacacct gaggttggtt ttgctgaaga ggagaaaact 660  
ggtgaggata ttaaagaaac tatagtagtc gaggttgcca caactacagc agcaccagta 720  
ctaacagaac cagaatctgt tgaggagaca ccaaaagaag ctgaagttgt agtggagaa 780  
tcaccaaaag agccagaaga agtatcaata tggggaattc cacttcttgc tgatgaaaga 840  
agtgatgtaa ttctattgaa attcttaaga gcaagagatt atagagtga agatgctttc 900  
actatgatta gaaatactgc tcgttgagga aaagaatttg aggttgattc tttacttgat 960  
gaagatcttg gaaatgatta tgagaaagtt gtttttacac atggagttga taaacaaggt 1020  
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agtttggtgt tgcaagcca tctaaaactg ctgagaccct tttcaagtac atagctcctg 1440  
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ctgatactgt 1510

<210> 8  
<211> 427  
<212> PRT  
<213> Beta vulgaris

<400> 8  
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35 40 45  
Glu Lys Pro Ala Asp Ser Ala Glu Ala Lys Ile Ala Gln Gln Val Ser  
50 55 60  
Phe Lys Glu Glu Thr Asn Val Ala Ser Glu Leu Pro Glu Leu His Arg  
65 70 75 80

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Lys Ala Leu Glu Asp Leu Lys Lys Leu Ile Gln Glu Ala Leu Glu Lys  
                     85                                    90                                    95  
 His Glu Phe Ser Ser Pro Pro Pro Pro Pro Pro Pro Ala Pro Ala Lys  
                     100                                    105                                    110  
 Val Glu Glu Lys Ala Glu Glu Lys Lys Glu Glu Gln Pro Pro Ser Thr  
                     115                                    120                                    125  
 Thr Ser Thr Thr Thr Thr Thr Thr Thr Ala Val Ser Asp Glu Val Ala  
                     130                                    135                                    140  
 Val Ala Pro Pro Ser Glu Glu Ala Pro Lys Thr Asp Glu Ala Ser Pro  
                     145                                    150                                    155                                    160  
 Lys Val Glu Glu Glu Pro Ala Lys Ile Val Glu Gln Pro Pro Thr Thr  
                                     165                                    170                                    175  
 Pro Ala Glu Glu Pro Glu Pro Ala Lys Thr Pro Glu Val Val Val Ala  
                                     180                                    185                                    190  
 Glu Glu Glu Lys Thr Gly Glu Asp Ile Lys Glu Thr Ile Val Val Glu  
                                     195                                    200                                    205  
 Val Ala Thr Thr Thr Ala Ala Pro Val Leu Thr Glu Pro Glu Ser Val  
                     210                                    215                                    220  
 Glu Glu Thr Pro Lys Glu Ala Glu Val Val Val Glu Glu Ser Pro Lys  
                     225                                    230                                    235                                    240  
 Glu Pro Glu Glu Val Ser Ile Trp Gly Ile Pro Leu Leu Ala Asp Glu  
                                     245                                    250                                    255  
 Arg Ser Asp Val Ile Leu Leu Lys Phe Leu Arg Ala Arg Asp Tyr Arg  
                     260                                    265                                    270  
 Val Lys Asp Ala Phe Thr Met Ile Arg Asn Thr Ala Arg Trp Arg Lys  
                     275                                    280                                    285  
 Glu Phe Glu Val Asp Ser Leu Leu Asp Glu Asp Leu Gly Asn Asp Tyr  
                     290                                    295                                    300  
 Glu Lys Val Val Phe Thr His Gly Val Asp Lys Gln Gly Arg Pro Val  
                     305                                    310                                    315                                    320  
 Cys Tyr Asn Val Phe Gly Glu Phe Gln Asn Lys Glu Leu Tyr Gln Asn  
                                     325                                    330                                    335  
 Thr Phe Ser Asp Ala Glu Lys Arg Lys Lys Phe Leu Arg Trp Leu Ile  
                     340                                    345                                    350  
 Gln Phe Leu Glu Lys Thr Ile Arg Thr Leu Asp Phe Ser Pro Glu Gly  
                     355                                    360                                    365  
 Ile Asn Ser Phe Val Leu Val Asn Asp Leu Lys Asn Ser Pro Gly Tyr  
                     370                                    375                                    380  
 Gly Lys Arg Asp Leu Tyr Lys Val Ile Asp Lys Phe Leu Glu Ile Leu  
                     385                                    390                                    395                                    400  
 Gln Asp Asn Tyr Pro Glu Phe Ala Ala Lys Gln Leu Cys Ile Asn Val  
                                     405                                    410                                    415

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Ser Trp Trp Ser Trp His Thr Thr Gly Ser Ile  
420 425

<210> 9  
<211> 2052  
<212> DNA  
<213> Beta vulgaris

<220>  
<221> misc\_feature  
<222> (2049)..(2049)  
<223> n is a, c, g, or t

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ggatgaatat tccaatagaa aatcttcttg tcttgctatc tccaggagag ggcctagcct 180  
tgttttaagg gactcagcgg agaacaacaa agatcggaaat gttcagggtt gcagccgagt 240  
tggatgtggc agcaagttga attcagttaa ggatgctaaa gttagctctc cgagtaaagt 300  
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gcagtctgct gaatcaagtc tcagtaagaa gagggacaca ggtttagtaga agagaaatgg 840  
tgaagctgag agtagtttac ctgtgagagg taagaaaatt aatggggcaa cccaagatga 900  
taggaggaat gactatccaa atcgtggaat atcaatatct gatacaaggc gtaccagaag 960  
ctcgaatcct gggaataacg atgtcacgct tgttaggagt cggagatctg ttgctagaac 1020  
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cccactttca cctctaccg agtcatcaac tggaggaact gatttttagtt tggaaaatca 1140  
gttctctggc cgaactccag ctggttcttt aagttcttat aatagaccag gtggcggtag 1200  
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tatgaaccgt gataccttaa gacagtacaa cttagatggg attgcagaga tgttatttagc 1320  
tctagagaga attgaacaag aagaagatcc aacctatgag caattgcttg ttctggagac 1380  
taatcttttc ctaggaggac ttctttttca tgatcagcac agggacatga ggctggatat 1440  
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gccgtgccag aagatgattt ggctaagtgt cttaaaagga acatctacca ggggtgttgca 1560  
gattgtagag aggatgagca tgatatcaaa tgcagcatat gccaggaaga atatggtggc 1620  
ggggaagaag taggaagatt gagttgtgat cacagctacc acattgaatg tataaatcaa 1680  
tggttgaggc tcaagaactg gtgccctatc tgcaaggctt ctgcatcacc ttcaacttca 1740  
gcaactccgc ctccctgaac ttcgctgtta tattcttccc ttttttttcc agtttgtaca 1800  
gaccggaatc tgtcgatttt tatttcttca tcagaaatct gatgtttcta tagatagtcc 1860  
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aataatgctc gagctgttag aagctccagt atgggaacag gttcacttca cttattttac 1980  
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<210> 10  
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<212> PRT  
<213> Beta vulgaris

<400> 10  
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Arg Gly Pro Ser Leu Val Leu Arg Asp Ser Ala Glu Asn Asn Lys Asp  
20 25 30

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Arg	Asn	Val	Gln	Val	Cys	Ser	Arg	Val	Gly	Cys	Gly	Ser	Lys	Leu	Asn
	35						40					45			
Ser	Val	Lys	Asp	Ala	Lys	Val	Ser	Ser	Pro	Ser	Lys	Val	Lys	Ser	Pro
	50					55					60				
Lys	Thr	Pro	Phe	Arg	Ser	Ser	Ala	Gln	Gly	Lys	Glu	Thr	Ile	Gly	Ser
65					70					75					80
Ser	Ser	Arg	Thr	Leu	Ala	Ser	Pro	Ser	Pro	Phe	Lys	Lys	Ser	Leu	Ser
				85					90					95	
Asp	Arg	Lys	Lys	Lys	Leu	Pro	Ser	Asn	Leu	Asp	Thr	Asp	Ser	Glu	Met
			100					105					110		
Cys	Ser	Leu	Gln	Asp	Glu	Ser	Glu	Glu	Val	Ser	Gly	Lys	Thr	Arg	Ile
		115					120					125			
Arg	Val	Gln	Pro	Glu	Pro	Glu	Asp	His	Asp	Ser	Ile	Glu	Ala	Ser	Ser
	130					135					140				
Ser	Glu	Ala	Gly	Ser	Ser	Ser	Ser	Gly	Pro	Ser	Asn	Arg	Leu	Ala	Asn
145					150					155					160
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 Leu Val Leu Glu Thr Asn Leu Phe Leu Gly Gly Leu Ser Phe His Asp  
 420 425 430  
 Gln His Arg Asp Met Arg Leu Asp Ile Asp Asn Met Ser Tyr Glu Glu  
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 450 455 460  
 Lys Met Ile Trp Leu Ser Val Leu Lys Gly Thr Ser Thr Arg Val Leu  
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